logical and not a sensory phenomenon, and Prof. Le Conte's ingenious explanation becomes unnecessary.

In parenthesis, may I not ask whether since the rods and cones are inverted, *i. e.*, turned away from the light, would not Prof. Le Conte's 'push' produce an inverted sensation?

That the rectification of the retinal image is a matter of experience, will, I think, be readily believed by any one who has worked much with the microscope. The microscope also inverts the image, and when it is re-inverted in the eye it falls on the retina rightly placed, that is to say without inversion. A beginner finds it almost impossible to move a preparation under the microscope in the way he wishes, but with practice the coördination of sight and movement becomes so perfect that the adjustment is unconscious. Now suppose a child had inverted glasses kept permanently before its eyes, so as to correct the retinal inversion, would it not learn to adjust all its movements, just as microscopists learn to adjust one set of movements? In short would not that child think it saw everything right side up? Would it be conscious of any peculiarity in its visual conditions—of a great difference between it and all other children? I think, clearly not.

CHARLES S. MINOT.

HARVARD MEDICAL SCHOOL,
November 11, 1895.

## SHELLS AS IMPLEMENTS.

EDITOR OF SCIENCE: Since writing about the pierced mussel shells of Florida and from the Shingu I have received a most obliging letter from Dr. Karl von den Steinen, in which he says: "On the Shingu they scrape wood with the pierced mussel *Anodonta*, while the Bororó of the Southern Lorenzo use the pierced *Bulimus* in their woodwork. Oars, handles of axes and other implements, bull roarers and bows are rasped down and smoothed therewith. The objects are not put through the hole for polishing, but the mussel passes along them, the two edges of the hole operate alternately and greater accuracy of work and control over the implement are secured. The edge of the hole is not necessarily very sharp, neither does the workman retouch the edges as would the flint worker. He simply throws the shell away, or makes another hole, as do the Bororó when it fails to work.

"They make the hole with the point of a palm nut, *acuri* on the Shingu *oaussú* on the Southern Lorenzo. Before making the hole they remove the outer part of the shell with the teeth." Dr. von den Steinen also sends drawings of the Payaqua mounted spoon, with small, smooth holes bored near the hinge to aid in the lashing. I should like my colleagues to note this interesting information in connection with the mussel shells of the Southern United States, having holes punched through them.

O. T. MASON.

## A REPLY.

EDITOR OF SCIENCE—I note the criticisms in SCIENCE for November 1st, which my friend, Mr. Witmer Stone, has made upon my little book, 'A Naturalist in Mexico,' and I beg leave to answer the same through the columns of the same paper.

In the first place I wish to say that a foot note was prepared for pages 13, 80, etc., but which unfortunately did not appear in the published edition, and which was printed as follows upon a slip to be inserted in the volume. This slip was not, unfortunately, placed in the first fifty copies, and hence Mr. Stone's very just first criticisms:

ERRATA: For the account of the early discovery and conquest of Yucatan, and for the measurements of the ruins of Uxmal and Labna, the author is indebted to Stevens' 'Incidents of Travel in Yucatan.'

For the data used in the descriptions of the mountains, and for the identifications, and some notes on the birds, and of the land and fresh-water shells, the author is indebted to the papers of Messrs. Heilprin, Pilsbry and Stone, published in the Proc. Phil. Acad. Sci., 1890–5.

Our next point is the description of the different measurements of Orizaba, which were taken from Prof. Heilprin's paper as a matter of course, since the original papers from which he took them were not at my command. The error of measurement by Dr. Kaska with a 'thermometer' instead of barometer is a typographical error.

In regard to his next point I fail to see how my short description of the birds could well be